

[4910-13]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Parts 121, 125**

**[Docket No. FAA-1999-6140; Amendment Nos. 121-271 & 125-32]**

**RIN 2120-AG88**

**Revisions to Digital Flight Data Recorder Requirements for  
Airbus Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule; request for comments.

**SUMMARY:** This action amends the flight data recorder regulations by adding language to allow certain Airbus airplanes to record certain data parameters using resolution and sampling requirements that differ slightly from the current regulation. This amendment is necessary because the Airbus airplanes are unable to record certain flight parameters under the existing criteria without undergoing unintended and expensive retrofit.

**DATES:** This final rule is effective August 17, 1999.

Comments must be submitted on or before September 17, 1999.

**ADDRESSES:** Comments on this final rule should be mailed or delivered, in duplicate to: U.S. Department of Transportation Dockets, Docket No. FAA-1999-6140, 400 Seventh Street, SW, Room Plaza 401, Washington, DC 20590.

Comments may also be sent electronically to the following internet address: 9-NPRM-CMTS@faa.gov. Comments may be filed and/or examined in Room Plaza 401 between 10 a.m. and 5 p.m. weekdays except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Gary E. Davis, Air Carrier Operations Branch (AFS-201), Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, telephone (202) 267-8166.

#### **SUPPLEMENTARY INFORMATION**

##### **Comments Invited**

This final rule is being adopted without prior notice and prior public comment. The Regulatory Policies and Procedures of the Department of Transportation (DOT) (44 FR 1134; February 26, 1979), however, provide that, to the maximum extent possible, operating administrations for the DOT should provide an opportunity for public comment on regulations issued without prior notice. Accordingly, interested persons are invited to participate in this rulemaking by submitting such written data, views, or arguments, as they may desire. Comments relating to environmental, energy, federalism, or international trade impacts that might result from this amendment also are invited. Comments must include the regulatory docket or

amendment number and must be submitted in duplicate to the address above. All comments received, as well as a report summarizing each substantive public contact with FAA personnel on this rulemaking, will be filed in the public docket. The docket is available for public inspection before and after the comment closing date.

The FAA will consider all comments received on or before the closing date for comments. Late filed comments will be considered to the extent practicable. This final rule may be amended in light of the comments received.

Commenters who want the FAA to acknowledge receipt of their comments submitted in response to this final rule must include a preaddressed, stamped postcard with those comments on which the following statement is made:

"Comments to Docket No. FAA-1999-6140. The postcard will be date-stamped by the FAA and mailed to the commenter.

#### **Availability of Final Rule**

An electronic copy of this document may be downloaded using a modem and suitable communications software from the FAA regulations section of the Fedworld electronic bulletin board service (telephone: (703) 321-3339), or the Government Printing Office's (GPO) electronic bulletin board service (telephone: (202) 512-1661).

Internet users may reach the FAA's web page at <http://www.faa.gov/avr/arm/nprm/nprm.htm>, or the Government Printing Office's webpage at <http://www.access.gpo.gov/nara> for access to recently published rulemaking documents.

Any person may obtain a copy of this final rule by submitting a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue, SW, Washington, DC 20591, or by calling (202) 267-9680. Communications must identify the notice number or docket number of this rule.

Persons interested in being placed on the mailing list for future Notices of Proposed Rulemaking or Final Rules should request from the above office a copy of Advisory Circular No. 11-2A, Notice of Proposed Rulemaking Distribution System, that describes the application procedure.

#### **Small Entity Inquiries**

If you are a small entity and have a question, contact your local FAA official. If you do not know how to contact your local FAA official, you may contact Charlene Brown, Program Analyst Staff, Office of Rulemaking, ARM-27, Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, 1-888-551-1594. Internet users can find additional information on SBREFA in the "Quick

Jump" section of the FAA's web page at <http://www.faa.gov> and may send electronic inquiries to the following internet address: 9-AWA-SBREFA@faa.gov.

## **BACKGROUND**

### **Statement of the Problem**

After the amendments to the DFDR requirements became effective on August 18, 1997 (62 FR 38362), the FAA began receiving telephone inquiries, requests for meetings, and petitions for exemption from Airbus Industries (Airbus) concerning the economic impact of the amendments on certain Airbus airplanes. Airbus claimed that in order to comply with the new DFDR recording requirements of 14 CFR Appendix M, its A300 B2/B4 series, A318/A319/A320/A321 series, and its A330/A340 series airplanes would have to undergo major equipment retrofits. During the rulemaking, the FAA had stated that the rule was being tailored to avoid major equipment retrofits.

The digital flight data recorders (DFDRs) in the affected Airbus airplanes already record the required parameters, but some of the resolution and sampling intervals for certain parameters differ slightly from those required by Appendix M. Airbus noted this difference in its comment to the NPRM, but the comment was not fully

addressed in the preamble to the final rule, issued in August 1997.

#### **History of amendments to DFDR requirements**

On February 22, 1995, the NTSB recommended that the FAA require upgrades of the flight data recorders installed on certain airplanes to record certain additional parameters not required by the current regulations. Two of the recommendations made by the NTSB affected the subject Airbus airplanes:

Recommendation No. A-95-26. Amend, by December 31, 1995, 14 CFR §§121.343, 125.225, and 135.152 to require that Boeing 727 airplanes, Lockheed L-1011 airplanes, and all transport category airplanes operated under 14 CFR Parts 121, 125, or 135 whose type certificates apply to airplanes still in production, be equipped to record on a flight data recorder system, as a minimum, the parameters listed in "Proposed Minimum FDR Parameter Requirements for Airplanes in Service" plus any other parameters required by current regulations applicable to each individual airplane. Specify that the airplanes be so equipped by January 1, 1998, or by the later date when they meet Stage 3 noise requirements but, regardless of Stage 3 compliance status, no later than December 31, 1999. (Classified as Class II, Priority Action)

Recommendation No. A-95-27. Amend, by December 31, 1995, 14 CFR 121.343, 125.225, and 135.152 to require that all airplanes operated under 14 CFR Parts 121, 125, or 135, having 10 or more seats, and for which an original airworthiness certificate is received after December 31, 1996, record the parameters listed in "Proposed FDR Enhancements for Newly Manufactured Airplanes" on a flight data recorder having at least a 25-hour recording capacity. (Classified as Class II, Priority Action)

#### **Notice of Proposed Rulemaking**

On July 16, 1996, the FAA published a notice for proposed rulemaking (NPRM) (Notice No. 96-7, 61 FR 37143) addressing revisions to DFDR rules. The proposals were based on the NTSB recommendations, information obtained through the public hearing, and the efforts of the ARAC working group.

As part of its comment to the proposed rule, Airbus stated that there were current recorder systems that record the required parameters at sampling rates or resolutions that differ from the proposed Appendix M. Airbus suggested that the rates and resolutions be changed since meeting them would impose significant retrofit costs on operators of Airbus airplanes. It was not until Airbus petitioned for exemption from the Appendix M requirements that the

FAA's attention was focused on the insufficient response to the Airbus comment, the significant number of Airbus airplanes involved, and the minor variations that would be required from Appendix M requirements. As stated previously, it was never the intention of the FAA to require operators of any airplanes to incur significant equipment retrofit costs in order to comply with the requirements for DFDR upgrades.

The FAA believes that had it fully understood the overall impact the final rule would place on operators of Airbus airplanes, it would have made specific provisions to reduce or eliminate that impact in the final rule.

#### **Petitions for Exemption**

On April 9, 1998, Airbus petitioned the FAA for permanent exemptions from part 121, Appendix M. Airbus requested that the A319/320/321 series aircraft be exempted from the Appendix M resolution requirements and be allowed to record these alternatives for the following parameters:

PARAMETER	CURRENT RESOLUTION	REQUIRED RESOLUTION
(12B) pitch control input position	0.088 °	0.064 °
(13b) lateral control input position	0.088 °	0.080 °
(14a) rudder pedal position	0.088 °	0.050 °
(19) pitch trim surface position	0.088 °	0.084 °



Airbus requested that the A330/340 series aircraft be exempted from the Appendix M resolution requirements and be allowed to record these alternatives for the following parameters:

PARAMETER	CURRENT RESOLUTION	REQUIRED RESOLUTION
(7) roll attitude	0.703 °	0.500 °
(12B) pitch control input position	0.703 °	0.064 °
(13B) lateral control input position	0.703 °	0.80 °
(14a) rudder pedal position	0.703 °	0.120 °
(15) left & right elevator position	0.352 °	0.090 °
(16) aileron & spoiler position: right inboard and outboard aileron left inboard and outboard aileron right and left spoiler no.2 to 6	0.352 ° 0.352 ° 0.703 °	0.100 ° 0.100 ° 0.100 °
(17) rudder position	0.176 °	0.120 °
(19) pitch trim surface position	0.088 °	0.051 °
(20) flap position	0.250 °	0.165 °
(21) slat position	0.250 °	0.120 °
(24) outside air temperature	0.5 °	0.3 °

Airbus also requested that the A330/340 series aircraft be exempted from the Appendix M resolution requirements and be

allowed to record these alternatives for the following parameters:

PARAMETER	CURRENT SAMPLING INTERVAL IN SECONDS	REQUIRED SAMPLING INTERVAL IN SECONDS
(14) rudder pedal position	1	0.5
(17) rudder position	1	0.5

Airbus Industries stated that current Airbus A319, 320, 321, 330, and 340 series airplanes are equipped with a digital flight data recording system (DFDRS) that records all mandatory parameters, numbers 1 through 34.

The FAA has determined that it would not be appropriate to grant an exemption to Airbus on behalf of the operators of its aircraft. Even if exemptions were granted to individual operators, they would have to be permanent. The FAA has determined that, under such circumstances, a change to the rule language of Appendix M is the only appropriate means to account for the differences in Airbus DFDR equipment. Accordingly, the FAA is amending part 121 Appendix M, and Part 125 Appendix E to indicate that certain Airbus airplanes already in service may record the indicated parameters using the rates and resolutions listed. The FAA consulted with the NTSB concerning this variation, and the NTSB indicated that the

proposed change would not significantly affect its ability to investigate accident or incidents.

The FAA has determined that these changes will not adversely affect the safety of the aircraft, hinder the investigation of accidents or incidents by the NTSB, nor compromise the intent of the DFDR rules. This amendment will revise the resolution recording requirements of parameters 7, 12(b), 13(b), 14(a), 15, 16, 17, 19, 20, 21 and 24, and the sampling interval for parameters 14(a) and 17. The FAA has determined that these changes can be accommodated by footnotes in Appendix M to part 121 and Appendix E to part 125.

#### **Good Cause for Immediate Adoption**

Sections 553(b)(3)(B) and 553 (d)(3) of the Administrative Procedure Act (APA) (5 U.S.C. Sections 553(b)(3)(B) and 553(d)(3)) authorize agencies to dispense with certain notice procedures for rules when they find "good cause" to do so. Under section 553(b)(3)(B), the requirements of notice and opportunity for comment do not apply when the agency for good cause finds that those procedures are "impracticable, unnecessary, or contrary to the public interest." Section 553(d)(3) allows an agency, upon finding good cause, to make a rule effective

immediately, thereby avoiding the 30-day delayed effective date requirement in section 553.

The FAA finds that notice and public comment to this final rule are impracticable, unnecessary, and contrary to the public interest. This final rule amends the flight data recorder regulations by adding language to the appendices of parts 121 and 125 to allow certain Airbus airplanes to record certain data parameters using resolution and sampling requirements that differ slightly from the current regulation. As a result, the FAA has determined that notice and public comment are unnecessary because the change effectuates the original intent of the regulation, is not controversial, and is unlikely to result in adverse comments since it affects only operations of Airbus airplanes.

#### **Regulatory Evaluation Summary**

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, OMB directs agencies to

assess the effects of regulatory changes on international trade.

The FAA has determined that there are no costs associated with this final rule; the rule imposes no costs upon operators of Airbus airplanes. Instead, this rule change relieves operators of Airbus airplanes from a regulatory burden that was inadvertently imposed on them in the adoption of the 1997 regulations, and would have an impact beginning August 18, 1999. This change effectuates the original intent of the 1997 regulations.

The FAA has determined this rule is not "a significant regulatory action" under section 3(f) of Executive Order 12866 and, therefore, is not subject to review by the Office of Management and Budget. The rule is not considered significant under the regulatory policies and procedures of the Department of Transportation (44 FR 11034, February 26, 1979). The rule will not have a significant impact on a substantial number of small entities and will not constitute a barrier to international trade.

#### **Regulatory Flexibility Determination**

The Regulatory Flexibility Act of 1980 (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of

the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation." To achieve that principle, the RFA requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The RFA covers a wide-range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis (RFA) as described in the RFA. However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the 1980 act provides that the head of the agency may so certify and an RFA is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The FAA has determined that there are no costs associated with this final rule. Accordingly, pursuant to

the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Federal Aviation Administration certifies that this proposed rule will not have a significant economic impact on a substantial number of small entities.

#### **International Trade Impact Analysis**

The revised rule will have little or no impact on trade for U.S. firms doing business in foreign countries and foreign firms doing business in the United States.

#### **Federalism Implications**

The regulations adopted herein will not have substantial direct effects on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

#### **Paperwork Reduction Act**

In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has determined that there are no requirements for information collection associated with this final rule.

## **Unfunded Mandates Reform Act Assessment**

Title II of the Unfunded Mandates Reform Act of 1995 (the Act), enacted as Pub. L. 104-4 on March 22, 1995, requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100 million or more (adjusted annually for inflation) in any one year. Section 204(a) of the Act, 2 U.S.C. 1534(a), requires the Federal agency to develop an effective process to permit timely input by elected officers (or their designees) of State, local, and tribal governments on a proposed "significant intergovernmental mandate." A "significant intergovernmental mandate" under the Act is any provision in a Federal agency regulation that would impose an enforceable duty upon State, local, and tribal governments, in the aggregate, of \$100 million (adjusted annually for inflation) in any one year. Section 203 of the Act, 2 U.S.C. 1533, which supplements section 204(a), provides that before establishing any regulatory requirements that might significantly or uniquely affect small governments, the agency shall have developed a plan that, among other things, provides for notice to



potentially affected small governments, if any, and for a meaningful and timely opportunity to provide input in the development of regulatory proposals.

This rule does not contain a Federal intergovernmental or private sector mandate that exceeds \$100 million a year.

#### **Environmental Analysis**

FAA Order 1050.1D defines FAA actions that may be categorically excluded from preparation of a National Environmental Policy Act (NEPA) environmental assessment or environmental impact statement. In accordance with FAA Order 1050.1D, Appendix 4, paragraph 4(j), this rulemaking action qualifies for a categorical exclusion.

#### **Energy Impact**

The energy impact of the rule has been assessed in accordance with the Energy Policy and Conservation Act (EPCA) and Public Law 94-163, as amended (43 U.S.C. 6362) and FAA Order 1053.1. It has been determined that the rule is not a major regulatory action under the provisions of the EPCA.

#### **List of Subjects**

14 CFR Part 121

Air carriers, Aviation safety, Reporting and  
recordkeeping requirements, Transportation  
14 CFR Part 125

Aircraft, Airmen, Aviation safety, Reporting and  
recordkeeping requirements

### **The Amendment**

Accordingly, the Federal Aviation Administration  
amends parts 121 and 125 of Chapter 1 of Title 14 of the  
Code of Federal Regulations as follows:

PART 121--OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND  
SUPPLEMENTAL OPERATIONS

1. The authority citation for part 121 continues to  
read as follows:

Authority: 49 USC. 106(g), 40113, 40119, 44101, 44701-  
44702, 44705, 44709-44711, 44713, 44716-44717, 44722,  
44901, 44903-44904, 44912, 46105.

2. In Appendix M, the title of the Appendix, and item  
numbers 1, 7, 12b, 13b, 14a, 15, 16, 17, 19, 20, 21, 23,  
and 24 are revised to read as follows:

### **APPENDIX M TO PART 121 -- AIRPLANE FLIGHT RECORDER SPECIFICATIONS**

The recorded values must meet the designated range,  
resolution, and accuracy requirements during dynamic and

static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks
1. Time or Relative Times Counts. <sup>1</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
7. Roll Attitude. <sup>2</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
12b. Pitch Control(s) position (fly-by-wire systems). <sup>3</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
13b. Lateral Control position(s) (fly-by- wire). <sup>4</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
14a. Yaw Control position(s) (non-fly-by-	* * *	* * *	* * *	* * *	* * *

<sup>1</sup> For A300 B2/B4 airplanes, resolution = 6 seconds.

<sup>2</sup> For A330/A340 series airplanes, resolution = 0.703°

<sup>3</sup> For A318/A319/A320/A321 series airplanes, resolution = 0.275% (0.088°>0.064°)  
For A330/A340 series airplanes, resolution = 2.20% (0.703°>0.064°)

<sup>4</sup> For A318/A319/A320/A321 series airplanes, resolution = 0.22% (0.088°>0.080°)  
For A330/A340 series airplanes, resolution = 1.76% (0.703°>0.080°)

<sup>5</sup> For A318/A319/A320/A321 series airplanes, resolution = 0.21% (0.088°>0.084°)

wire). <sup>5</sup>					
15. Pitch Control Surface(s) Position. <sup>6</sup>	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
16. Lateral Control Surface(s) Position. <sup>7</sup>	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
17. Yaw Control Surface(s) Position. <sup>8</sup>	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
* * *	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
19. Pitch Trim Surface Position. <sup>9</sup>	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
20. Trailing Edge Flap or Cockpit Control Selection. <sup>10</sup>	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
21. Leading Edge Flap or Cockpit Control Selection. <sup>11</sup>	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
* * *	* * *	* * *	* * *	* * *	* * * ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
23. Ground Spoiler Position or	* * *	* * *	* * *	* * *	* * *

For A330/A340 series airplanes, resolution = 1.18% (0.703°>0.120°)

<sup>6</sup> For A330/A340 series airplanes, resolution = 0.783% (0.352°>0.090°)

<sup>7</sup> For A330/A340 series airplanes, aileron resolution = 0.704% (0.352°>0.100°)

For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°)

<sup>8</sup> For A330/A340 series airplanes, resolution = 0.30% (0.176°>0.12°)

For A330/A340 series airplanes, seconds per sampling interval = 1

<sup>9</sup> For all Airbus airplanes, resolution = 0.518% (0.088°>0.051°)

<sup>10</sup> For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°)

<sup>11</sup> For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°)

For A300 B2/B4 series airplanes, resolution = 0.92% (0.230°>0.125°)

Speed Brake Selection. <sup>12</sup>					.....
24. Outside Air Temperature or Total Air Temperature <sup>13</sup>	* * *	* * *	* * *	* * *	* * * .....

<sup>12</sup> For A300-600/A310 series airplanes, speed brake resolution = 0.224% (0.112°>0.100°)

For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°)

<sup>13</sup> For A330/A340 series airplanes, resolution = 0.5°C.

Part 125--CERTIFICATION AND OPERATIONS: AIRPLANES HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE

3. The authority citation for Part 125 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701-44702, 44705, 44710-44711, 44713, 44716-44717, 44722.

4. In Appendix E, the title of the Appendix, and item numbers 1, 7, 12b, 13b, 14a, 15, 16, 17, 19, 20, 21, 23, and 24 are revised to read as follows:

#### APPENDIX E TO PART 125 -- AIRPLANE FLIGHT RECORDER SPECIFICATIONS

The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.

Parameters	Range	Accuracy (sensor input)	Seconds per sampling interval	Resolution	Remarks

1. Time or Relative Times Counts. <sup>1</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
7. Roll Attitude. <sup>2</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
12b. Pitch Control(s) position (fly-by-wire systems). <sup>3</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
13b. Lateral Control position(s) (fly-by-wire). <sup>4</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
14a. Yaw Control position(s) (non-fly-by-wire). <sup>5</sup>	* * *	* * *	* * *	* * *	* * *
15. Pitch Control Surface(s) Position. <sup>6</sup>	* * *	* * *	* * *	* * *	* * *
16. Lateral Control Surface(s) Position. <sup>7</sup>	* * *	* * *	* * *	* * *	* * *
17. Yaw Control Surface(s) Position. <sup>8</sup>	* * *	* * *	* * *	* * *	* * *
* * *	* * *	* * *	* * *	* * *	* * *
19. Pitch Trim Surface Position. <sup>9</sup>	* * *	* * *	* * *	* * *	* * *

20. Trailing Edge Flap or Cockpit Control Selection. <sup>10</sup>	* * *	* * *	* * *	* * *	* * * ■■■■■■■■■■
***	***	***	***	***	*** ■■■■■■■■■■
23. Ground Spoiler Position or Speed Brake Selection. <sup>12</sup>	* * *	* * *	* * *	* * *	* * * ■■■■■■■■■■
24. Outside Air Temperature or Total Air Temperature <sup>13</sup>	* * *	* * *	* * *	* * *	* * * ■■■■■■■■■■

RIN # 2120-AG88 Revisions to Digital Flight Data Recorder  
Requirements for Airbus Airplanes

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<sup>1</sup> For A300 B2/B4 airplanes, resolution = 6 seconds.

<sup>2</sup> For A330/A340 series airplanes, resolution = 0.703°

<sup>3</sup> For A318/A319/A320/A321 series airplanes, resolution = 0.275% (0.088°>0.064°)

For A330/A340 series airplanes, resolution = 2.20% (0.703°>0.064°)

<sup>4</sup> For A318/A319/A320/A321 series airplanes, resolution = 0.22% (0.088°>0.080°)

For A330/A340 series airplanes, resolution = 1.76% (0.703°>0.080°)

<sup>5</sup> For A318/A319/A320/A321 series airplanes, resolution = 0.21% (0.088°>0.084°)

For A330/A340 series airplanes, resolution = 1.18% (0.703°>0.120°)

<sup>6</sup> For A330/A340 series airplanes, resolution = 0.783% (0.352°>0.090°)

<sup>7</sup> For A330/A340 series airplanes, aileron resolution = 0.704% (0.352°>0.100°)

For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°)

<sup>8</sup> For A330/A340 series airplanes, resolution = 0.30% (0.176°>0.12°)

For A330/A340 series airplanes, seconds per sampling interval=1

<sup>9</sup> For all Airbus airplanes, resolution = 0.518% (0.088°>0.051°)

<sup>10</sup> For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°)

<sup>11</sup> For A330/A340 series airplanes, resolution = 1.05% (0.250°>0.120°)

For A300 B2/B4 series airplanes, resolution = 0.92% (0.230°>0.125°)

<sup>12</sup> For A300-600/A310 series airplanes, speed brake resolution = 0.224% (0.112°>0.100°)

For A330/A340 series airplanes, spoiler resolution = 1.406% (0.703°>0.100°)

<sup>13</sup> For A330/A340 series airplanes, resolution = 0.5°C.

Issued in Washington, DC, on August 17, 1999.

Jane F. Garvey  
Administrator.